MATH 225
Linear Algebra and Differential Equations
2019-2020 Spring
Project 4

DUE DATE: May 19, Tuesday before 23:55 p.m.

QUESTIONS:

1)(30 pts.) Find the solution of the IVP

$\frac{dx}{dt} = y + z$
$\frac{dy}{dt} = x + z$
$\frac{dz}{dt} = x + y$
with $x(0) = 0, y(0) = 1, z(0) = -1$.

2)(20 pts.) Find the general solution of the non-homogeneous differential equation $y^{(4)} - 4y^{(3)} + 15y'' - 22y' + 10y = 2cos^2x + e^x$. Determine the complementary solution y_c and particular solution y_p. **DO NOT EVALUATE THE COEFFICIENTS of** y_p.

3) (20 pts.) Solve the 2nd order non-homogeneous differential equation $x^2y'' + xy' + y = lnx, x > 0$.

IMPORTANT:

1.Don't forget to write your Name, Lastname, Department, Section and Student ID on the 1st page of your project.
2.You must show all your work in well-organized English or mathematical sentences, and explain your reasoning carefully.
3.Your project must be hand written. The projects written by latex or word etc. will not be accepted.
4.You must submit your project as a 1 pdf file. Before submission check the file you convert to pdf. If you cannot read it, try to do the best. The name of the pdf file must contain your name. e.g. **yosum.project4.pdf** would be the name of my project.
5.You must **SUBMIT** your project. The **DRAFTS** will not be accepted because **DRAFT** means **INCOMPLETE.** You are **responsible** to complete the submission process. It is not our job.
6. Late submissions will not be accepted